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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,895	05/23/2006	Wook B. Lee Seislink	50243	3431

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EXAMINER	
PHAN, THAI Q	

ART UNIT	PAPER NUMBER
2128	

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04/01/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,895	LEE SEISLINK, WOOK B.	
	Examiner	Art Unit	
	Thai Phan	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *May 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to patent application no. 10/564,895, filed on Jan. 17, 2006. Claims 1-35 are pending in the Action.

Information Disclosure Statement

Information Disclosure Statement filed on May 24, 2006 is being considered.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al, US patent no. 5,838,634.

As per claim 1, Jones anticipates a method for prestack time migration, including velocity calibration and trend fitting before curved-ray prestack time migration,

editing seismic velocities, including at least one of honoring geologic trends existing in a survey area, using envelopes of vertical trends based on rock properties and using computed envelopes (col. 3, lines 25-46);

computing lateral trends of RMS velocities derived from seismic data by geo-statistical variogram modeling (col. 3, lines 25-34, col. 11, line 54 to col. 12, line 9);

preparing scale factors from well (hard) data and seismic (soft) data wherein the well (hard) data include at least one of checkshot data and up-scaled and bulk-shifted sonic logs;

calibrating RMS velocities, including applying interpolated scale factors to RMS velocities wherein the interpolation is a function of the lateral trends; and

curved-ray prestack time migration using interpolated calibrated RMS velocities, wherein the interpolation is a function of the lateral trends (cols. 14-16).

As per claim 2, Jones anticipates a method for velocity calibration and trend fitting before prestack depth migration, comprising:

constructing a geologically plausible velocity model from seismic data for subsequent prestack depth migration ;

computing variogram modeling of interval velocities;

calibrating interval velocities from the velocity model with hard well data and trend fitting the calibrated velocities using the variogram modeling;

interpreting prestack time migration results;

verifying well marker ties;

updating key horizons based on the verifying;

repeating steps above if required; and

prestack depth migrating seismic data using the calibration trend fitted velocity model (cols. 16-19).

As per claim 3, the method of claim 1 wherein editing of seismic velocity data, includes weighing, and further includes converting seismic velocities to

interval velocities using Dix equation and to average velocities wherein interval velocities are defined at the center of the layers; and

computing envelope interval functions by specifying upper and lower limits based on geologic constraints and deleting and/or down weighting erratic functions of picks, lying outside of envelope functions; and

re-sampling and applying median and damped-least-square filters on RMS velocity domain.

As per claim 4, the method of claim 1 that includes calibrating seismic velocities using at least one key controlling stratigraphic horizon such that mid stratigraphic horizon(s) provides conforming surfaces for velocity calibration (Summary of the Invention).

As per claim 5, Jones anticipates the method of claim 1 that includes deriving correction scale factors between well (hard) data and seismic (soft) data; and interpolating scale factors by geo-statistical Kriging, where scale factors are computed by dividing check-shot RMS velocities with seismic RMS velocities at well locations; and computing calibrated velocities by multiplying scale factors.

As per claim 6, the method of claim 1 that includes computing lateral trends

of RMS velocities, consistent with geologic trends, by

computing a variogram model of seismic RM5 velocities; and

adjusting the model to take into account at least one of geologic trends and velocity trends derived from well (hard) data; and that further include interpolating calibrated seismic RMS velocities by Kriging on a stratigraphic grid for prestack time migration using the adjusted variogram model.

As per claim 7, the method of claim 2 that includes calibrating seismic interval velocities using stratigraphic horizon by

selecting at least one stratigraphic horizon, which will provide at least one conforming surface for interpolating interval velocities;

interpreting and updating stratigraphic horizons after curved-ray pre-stack time migration for use with pre-stack depth migration; and calibrating at least one of interval or average velocities using key controlling stratigraphic horizons.

As per claim 8, the method of claim 2 wherein computing variogram modeling of interval velocities includes:

adjusting the modeling with at least one of geologic trends and velocity trends from well data;

building a conforming stratigraphic unit using at least two updated stratigraphic surfaces; and

interpolating seismic interval velocities on a new statigraphic grid for pre-stack depth migration.

As per claim 9, the method of claim 1 wherein the well (hard) data includes a plurality of wells of check-shot data.

As per claim 10, the method of claim 1 that includes viewing at least one of geological maps, faults, geo-pressure zones, geologic markers and salt intrusion on an interactive workstation.

As per claim 11, the method of claim I that includes editing using envelopes and computing regional envelopes for a large survey area with hundreds of lease blocks.

As per claim 12, The method of claim 4 that includes using at least one

horizon controlling sedimentation style due to compaction.

As per claim 13, .wherein preparing scale factors includes at least one of deviated checkshot data and checkshot data from adjacent blocks in the well (hard) data.

As per claim 14, the method of claim 1 that includes calibrating average velocities derived from seismic data, including applying interpolated scale factors to the average velocities, and interpolating the calibrated seismic average velocities for time- to-depth conversion and depth interpretation.

As per claim 15, the method of claim 1 that includes interpolating scale factors by geostatistical Kriging, wherein scale factors are computed by dividing at least one checkshot and sonic interval (or average) velocities with seismic interval (or average) velocities at well locations; and computing calibrated velocities by multiplying scale factors.

As per claim 16, Jones anticipates the method of claim 1 wherein checkshot data includes at least one of deviated checkshot data and checkshot data from adjacent blocks (cols. 20-21).

As per claim 17-35, due to the similarity of the claims to the rejected claims above, claims 17-35 are also rejected in like manner.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US patent no. 6,388,947, issued to Washbourne et al, on May 2002

2. US patent no. 6,480,790, issued to Calvert et al, on Nov. 2002

3. US patent no. 7,292,241, issued to Thore et al, on Nov. 2007

4. US patent application publication no. 2004/0064294, issued to Van riel et al, on Apr. 2004

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai Phan whose telephone number is 571-272-3783. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

3. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 25, 2008

/Thai Phan/
Primary Examiner, Art Unit 2128